

Contents

	Page
About the Science Talent Search	2
Important Dates for 2010	2
The STS School Co-ordinator's Role	3
General Information for School STS co-ordinators and teachers	4
An Invitation to all Students in Victoria to enter the 59th Annual Science Talent Search	6
How to Enter	7
Special Judging Day	7
Awards	8
How to Get Started	9
Experimental Research	10
Lower Primary & Primary Divisions	10
Junior, Intermediate & Open Divisions	11
Class Project	12
(Lower Primary and Primary Divisions only)	12
Creative Writing	13
Lower Primary & Primary Divisions	13
Junior & Intermediate Divisions	14
Working Models	15
(All Divisions)	15
Inventions	16
(All Divisions)	16
Posters - Scientific Wallcharts	17
Lower Primary & Primary Divisions	17
Junior & Intermediate Divisions	18
Games	19
(All Divisions)	19
Computer Programs - Games & Simulations	20
(All Divisions)	20
Science Photography	21
(All Divisions)	21
Video Productions (DVD)	22
(All Divisions)	22
How to cite references and write a bibliography	23
Exhibition & Presentation Day	24
STS Presenters in 2009	24

Doing STS for the first time? See page 8

About the Science Talent Search



The Science Talent Search (STS) is a familiar concept to primary and secondary science teachers in Victoria.

STS was founded in 1952, making it one of the longest running programs of its type in the world!

STS has three broad aims:

1. To stimulate an ongoing interest in the study of Sciences by:
 - encouraging independent self-motivated project work amongst students of Science;
 - giving students the opportunity to communicate their achievements to a wider audience;
 - according recognition of effort and achievement in a scientific enterprise.
2. To promote the direct involvement of the students in the processes of Science and its communication.
3. To give the public at large an opportunity to see the quality of work being achieved in Science, by both primary and post primary students.

Why STS?

We believe that Science teachers have a professional responsibility to encourage students to develop a broader understanding and application of science and technology which is fundamental to sound social and personal judgement, now and in the future.

Science Talent Search is for everybody: for those planning a career in one of the sciences or technological disciplines, for those interested in scientific hobbies, or for those concerned enough to present a point of view about science through the medium of poster, essay, video, photography, games or computer programs.

The substantial participation in STS indicates that a significant number of teachers are making provision for students of widely differing interests and abilities to pursue scientific activities of interest to them.

We believe that personal expression of interest and concern through independently executed, open project work is an essential ingredient in the appreciation and understanding of Science.

We believe that through STS we are developing in students, skills and attitudes which will contribute to the well being and development of the wider community in which they will live and work.

Important Dates STS 2010

Monday 8 March	Online entry registration opens
Friday 28 May	Entry registration closes/Online system closes
Monday 21 June	Schools Pack 1 (Entry Labels) sent to schools
Thursday 29 July & Friday 30 July	Actual Entries to STAV House, Coburg (Country entries & Research/Creative writing)
LATE ENTRIES WILL NOT BE ACCEPTED	
Saturday 14 August	Public Judging Day Models, Inventions, Computers, Games, Photography, Posters, Video, and Class Project
Monday 30 August	Schools Pack 2 (Entries received) sent to schools
Monday 4 October	Schools Pack 3 (Results & certificates) sent to schools
Wednesday 3 November	Exhibition and Presentation Day

Entry registration closes 28 May

The STS School Co-ordinator's Role

Each school that enters STS **MUST** appoint an STS School Co-ordinator.

This person then becomes the contact person for all STS correspondence and is responsible for the following:

February to May

Publicise the STS competition in their school and ensure students and parents are given the relevant information concerning the appropriate sections.

February to October

Answer questions from staff and students about the STS competition.

March to May

Enter correctly and fully, all entry details on the STS online database by the due date.

Before you enter students please check that students and their teachers are aware of specific guidelines for the section they wish to enter.

Students will be disadvantaged if they don't follow all of the guidelines in this Handbook.

Ensure you have attended to the following:

- ☐ Read the STS School Co-ordinators' Role Description & General Information (page 3-5).
- ☐ Included Volunteer Judges details.
- ☐ Checked spelling of student names.
- ☐ The maximum number of entries is equal to 5% of your student enrolment at each campus OR 25 entries (whichever is the greater).
- ☐ The maximum number of entries per category - each Division and Section has no more than 25 entries (with exception of Class Project).
- ☐ Students are made aware of the current guidelines for the Sections they have entered, including presentation requirements.
- ☐ Students have been told to keep a copy of their entry (optional, but recommended as STS takes no responsibility for lost entries).
- ☐ Undertake to sort entries into Divisions and Sections (according to Schools Audit List), before delivery.

STS Website

www.sciencevictoria.com.au/sts

Make sure you have a look at the "For Teachers" pages as well as all of the other information.

May

- ☐ Check Entry Data. Check your online data. Print your own data from "View all entries" in the online database.

Please note that the entrant's ID code is unique and not transferable.

**** Names cannot be substituted once the online registration closes.**

June

- ☐ Receive and distribute Schools Pack 1 (Entry labels and yellow face sheets for student projects).
- ☐ Arrange payment of entry fees. Your school will be invoiced for all on-line entries.

July

- ☐ Assist in sorting entries. For Research & Creative Writing, you are requested to group entries into their respective Divisions and Sections before delivery.

August

- ☐ Make sure students are aware of venues and times for the Special Judging Day.
- ☐ Remind students to bring projects to the Judging Day. All metropolitan students **MUST** attend Judging Day.
- ☐ Ensure Judges from your school are aware of their judging commitments. Judges from Metropolitan Schools **MUST** assist with judging on the Saturday set aside for Judging Day.

August/September

- ☐ Receive and check Schools Pack 2 (Projects received).

October

- ☐ Receive and distribute Schools Pack 3 (Bursary Results and Presentation day details).
- ☐ Ensure that all registration details are followed precisely for Exhibition and Presentation Day.

A commitment by students to the Science Talent Search also involves a commitment by teachers from your school.



for School STS co-ordinators and teachers

1. Maximum Number of Entries per School Level: Primary Level (P-6) or Secondary Level (7-10)

- Enrolment numbers in a Primary campus include all students enrolled from P to 6, while enrolment numbers in a Secondary campus include students in Years 7 to 10 only.
- Each school campus (ie. P-6 or 7-10) is restricted to a maximum number of entries equal to 5% of the student enrolment at that campus OR 25 entries, whichever is the greater.
- In addition, each campus is allowed to submit a MAXIMUM OF 25 ENTRIES IN ANY ONE DIVISION/SECTION of STS. Thus a campus with an enrolment of 1200 will be entitled to 60 entries, with no more than 25 entries in each division/section. As an example, this campus may submit 60 entries with, say, 25 in Intermediate Research, 15 in Junior Models and 20 in Junior Games. Class projects are not included in these numbers.
- There is a maximum of 4 entries per school for the Class Project. A class project can have up to 35 students per project.
- For STS purposes a campus is a separate location with students permanently enrolled at that location and administered by a campus Principal.
- Primary and Secondary components at the one location are regarded as separate campuses. Separate Entry details must be completed for primary and secondary.

Note that a group entry is TWO students only.

2. Open Section (Year 11 and 12)

- STS aims to encourage students to pursue their interests in Science by allowing keen students who have personal interests in one of the Sections offered, the opportunity to develop these interests provided they fit into the guidelines of the competition. Students may enter all Sections except Posters and Creative Writing.
- A maximum of 5 entries in the Open Section is allowed per school. We hope teachers will encourage only those students who are capable of organising their time to fulfil VCE requirements and complete work on personal projects.

3. Individual and group entries

- Students can enter an individual project or a group project.
- A group consists of TWO students only, with the exception of the Class Project.
- The Class Project can have up to 35 students per project.

4. Schools' responsibilities for judging entries

All schools entering STS must provide 1 Judge per twelve entries (or part of). Therefore, even if your school has only one entry, you must still supply one judge.

All Judges from the metropolitan area will be required to select a Section which will be judged at one of three venues on Special Judging Day. You may, however, choose Creative Writing and Experimental Research as your **second** preference.

Teachers who cannot judge on Saturdays due to religious reasons can request an exception by email to projects@stav.vic.edu.au.

Judging on the Special Judging Day requires a commitment of about 5 hours - from 8:00am to 1:00pm.

Judging on the Special Judging Day is usually in pairs. Where possible a primary and secondary judge will be paired together. Judges are expected to evaluate all divisions within a section.

1. Country Judges can select any Division / Section. If posters/photography/videos/games/models/computers are selected, the Judge is committed to attend one of the Special Judging venues on judging day. If research or creative writing is selected, entries for judging will be sent to the judge.
2. If a judge becomes unavailable at the required judging time, it is the school's responsibility to provide any replacement judges for those who cannot fulfil their obligation.
3. If a school cannot supply the required number of judges, then the STS Committee will not judge entries from that school.

Students who submit a project into the experimental research section are automatically entered into the **National BHP Billiton Science Awards**. Students who win major bursaries in this section of STS will become finalists in this national competition. You must notify STS if you do NOT want your project forwarded to BHP Billiton Awards. For more information go to <http://www.scienceawards.org.au>

5. How to enter your students

All entry is through the STS web registration system.

The STS registration site will become live on 8 March 2010 at 9.00am. The site will be closed off at 5.00pm on Friday 28 May.

To get started:

1. Have the following information ready before you start:
 - a. School STS coordinator details (including correct email address)
 - b. List of volunteer judges (1 judge per 12 entries or part thereof) and their two preferences for judging sections.
 - c. Full STS student entry details.[Download student and judge proformas from the Science Talent Search website to help collect full details.]
2. Log onto the STS online system web address: www.stav.vic.edu.au/gui/sts/
3. Click on the **“Register here”** link
4. From the drop down list choose your school (check that the campus is correct). Primary and secondary must register as separate campuses.
5. If your school isn't on the list, contact STAV by email: projects@stav.vic.edu.au
6. Enter STS coordinator email address. Ensure you enter the address precisely.
7. Enter a password of your choosing and Login. Record your password somewhere for future reference.
8. Press **“Login”** and the program will generate an email message from which you can access your own area of the STS website. Make a copy of the web address for your records.

Once you receive your confirmation email:

9. Enter your email address and your password to access and edit the records for your school.
10. Check and update your school details. Choose the “Update School Details” link. Ensure you click on the **“Update Details”** button once your changes have been made.
11. Enter appropriate student and judge details. Please check spelling carefully and ensure you enter **all** details requested. STS will not make corrections for student details.
12. Ensure you press both the **“Add Student”** button & the **“Submit”** button or your information **won't be saved**.
13. You can add, edit or remove entries at any time from this point until the closing date Friday 28 May.

14. You should print your data from the “View all Entries” section of the database. Make amendments and correct errors online. The online system **closes permanently** on 28 May. No further changes can be made by you. Changes requested via the STAV Office will incur a fee of \$10 per student.

For more detailed instructions visit the STS website www.sciencevictoria.com.au/sts.html

6. Payment

Your school will be invoiced via your STS co-ordinator for the number of entries **in the online data base on the closing date**.

7. Delivery of entries

- **Metropolitan entries** (within 100km radius of GPO): entries in posters/photography/videos/games/models/class projects/computers **must** be taken by students to the appropriate judging venue on Judging Day. Entries in Research or Creative Writing must be posted (PO Box 109, Coburg VIC 3058) to **arrive** by Friday 30 July or delivered to STAV House, 5 Munro Street, Coburg on Thursday 29 July or Friday 30 July.
- **Country entries** (outside 100km radius of GPO): entries can be mailed (PO Box 109, Coburg VIC 3058), couriered or hand delivered to STAV House, 5 Munro Street, Coburg during the week starting Monday 26 July. All sent entries must arrive by 5:00pm Friday 30 July. NO Package can be larger than 0.5m x 0.5m x 0.5m or weigh more than 15kg.

COUNTRY STUDENTS attending Special Judging Day - DO NOT SEND entries to STAV House, Coburg. Students are required to take their entry with them to the Special Judging Day venue.

Entries delivered to STAV House, Coburg **will not** be transferred to Special Judging Day venues.

8. Collection of entries

- Teachers in metropolitan schools **MUST** arrange for the collection of all entries from the Exhibition venue, La Trobe University Union Building, from 12.00 noon to 1.00pm on Exhibition Day. Entries not collected on this day will be disposed of.
- Country entries will be returned by arrangement, provided they are within the size restrictions. Please notify STS by email if you want your entries returned.

An invitation to all students in Victoria



to enter the 59th Annual Science Talent Search

The Science Teachers' Association of Victoria Inc. invites all students to enter this year's Science Talent Search. You may enter as an individual or as part of a group of **two (2)**. You may enter into one or more of the Sections described in this book. Please check this Handbook for the Section guidelines, as entries which do not fulfil these guidelines will be disadvantaged.

Divisions

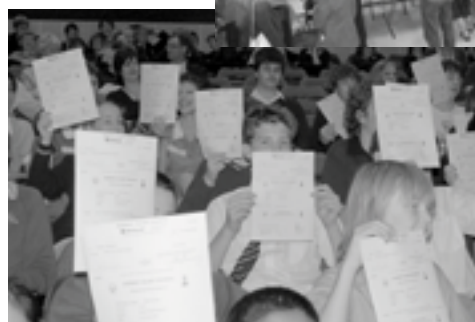
Division	Code	Year Level
Lower Primary	L	Prep. to Year 3
Primary	P	Years 4 to 6
Junior	J	Years 7 & 8
Intermediate	I	Years 9 & 10
Open	O	Years 11 & 12

Sections

Section	Code
Experimental Research	R
Creative Writing (except Open)	W
Working Models	M
Inventions	I
Games	G
Computer Programs	C
Posters - Scientific Wallcharts (except Open)	P
Science Photography	F
Video Productions	V
Class Project (Lower Primary and Primary only)	S

Country entries may be sent to STAV House, Coburg. However, keep your entry if you are going to attend a Special Judging Day Venue.

Ask your science teacher for details on how to enter.



Exhibition & Presentation Day

Important Dates for 2010

- **Entry registration**
Closes Friday 28 May 2010.
- **Experimental Research & Creative Writing**
Entries due Thursday 29 & Friday 30 July.
Projects to be mailed or delivered between 9am - 5pm to STAV House.
5 Munro Street
(PO Box 109)
Coburg VIC 3058
- **Judging Day - Video Productions, Photography & Class Project**
Bring entries on Saturday 14 August to:
Santa Maria College,
50 Separation Street, Northcote
(9.00am - 12.30pm)
- **Judging Day - Models, Inventions, Computers & Posters - Scientific Wallcharts**
Bring entries on Saturday 14 August to:
Methodist Ladies' College,
Fitzwilliam Street entrance, Kew
(9.00am - 12.30pm)
- **Judging Day - Games**
Bring entries on Saturday 14 August to:
Wesley College,
577 St Kilda Road, Prahran
(9.00am - 12.30pm)
- **Exhibition & Presentation Day**
Wednesday 3 November
(9.00am - 1.30pm)
La Trobe University, Union Hall, Bundoora.
Students to bring *winning* entries for Models, Inventions, Computers and Games sections. STS committee will arrange display of all other winning entries.

STS Website

www.sciencevictoria.com.au/sts

Make sure you have a look at the "For Students and Parents" pages as well as all of the other information.

Special Judging Day

1. Entry details

- Obtain an STS student entry proforma from your science teacher or from the STAV website:
www.sciencevictoria.com.au/sts/reginf
- Return the completed form ONLY to your Science Teacher.
- Your school STS Co-ordinator will enter the data online.

Your school STS co-ordinator will receive acknowledgement of your entry from STAV including: Entry Label, Face Sheets and general information.

2. Entry fees

Individual	\$8.00 per entry (inc GST)
Group (maximum 2 students)	\$15.00 per entry (inc GST)
Class Project (Lower Primary and Primary only)	\$30.00 per entry (inc GST)

Note that a group entry is TWO students only.

3. Delivery of entries

METROPOLITAN entrants

Creative Writing and Experimental Research

Entries in Creative Writing and Experimental Research Section will be delivered to STAV House by your teacher.

Working Models, Inventions, Computer Programs, Games, Photography, Posters, Video and Class Project

Entries in these Sections must be taken to the SPECIAL JUDGING DAY VENUES by you on

Saturday 14 August 2010.

Unaccompanied metropolitan entries will not be judged.

COUNTRY Entrants Only

Country entries must arrive at the address below during the week of **26 – 30 July 2010** during normal office hours (9 am to 5 pm):

The Director, Science Talent Search,
STAV House, 5 Munro Street,
(PO Box 109) Coburg, Victoria 3058

Entries must be hand delivered, mailed or sent by courier to STAV House (see your teacher) unless you are personally presenting your entry at a Special Judging Day venue. In this case you should bring your entry to the judging venue.

No package should be larger than 0.5m x 0.5m x 0.5m OR weigh more than 15kg.

ALL entrants

Remember:

- DO NOT send equipment with Experimental Research reports.
- DO NOT send live specimens.

You must bring your project with you to Judging Day.

Working Models, Inventions, Computer Programs and Posters - Scientific Wallcharts

Venue

Methodist Ladies' College,
Fitzwilliam Street entrance, Kew.
Saturday 14 August 2010

Times for judging are:

9.00am - 10.30am	Lower Primary and Primary
10.00am - 12.30pm	Junior, Intermediate & Open

Students are required to discuss their entry with STS Judges.

Computer entrants must bring their own computer, monitor, etc.

Video Productions, Photography and Class Project

Venue

Santa Maria College
50 Separation Street, Northcote
Saturday 14 August 2010

Times for judging are:

9.00am - 10.30am	Lower Primary and Primary
10.00am - 12.30pm	Junior, Intermediate & Open

Students are required to discuss their entry with STS Judges.

Videos entrants must bring their own laptop with DVD player.

Games

Venue

Wesley College, 577 St Kilda Road, Prahran.
Saturday 14 August 2010

Times for judging are:

9.00am - 10.30am	Lower Primary and Primary
10.00am - 12.30pm	Junior, Intermediate & Open

Students are required to discuss their entry with STS Judges.

**No responsibility is taken for lost or damaged equipment.
Please ensure you keep your property secure.**

*** Judges decisions are final.**

No correspondence will be entered into.*



All students who enter the Science Talent Search are eligible for Awards. Schools also become eligible for special awards.

Student Awards

A. Bursaries

Every year individuals and groups are awarded bursaries totalling tens of thousands of dollars, thanks to the generous sponsors of STS. Major and Minor bursaries are awarded in all Sections.

Special medallions are also presented to Major bursary winners who attend the Presentation Day ceremonies. Major Bursary winners who do not attend their Presentation Ceremony WILL NOT receive a medallion.

Bursary cheques are made out to individual entrants. In the case of a group award, the cheque value will be halved and made out to each member of the group.

B. Certificates

A bursary certificate is printed for each student gaining a Major or Minor award. This certificate includes the student's name, school name, title of project, division/section entered, sponsor's name and amount awarded.

A Merit Certificate is issued to all entrants whose projects were considered by the Judges to deserve special commendation. Those entrants who do not receive a prize-winning bursary or a Merit Certificate receive a Certificate of Acknowledgement.

School Awards

Schools with a very high standard of entries across all the sections are nominated by the STS Co-Directors for special awards.

The School Awards 2009

- Solway Primary School
- East Doncaster Secondary College
- Carey Baptist Grammar School
- Presbyterian Ladies College (Senior)

The 'Hugh McKnight' Encouragement Awards 2009

- Serpell Primary School
- Cheltenham Secondary College
- St Leonards College: Cornish Campus
- Fintona Girls School

ATTENTION TEACHERS!

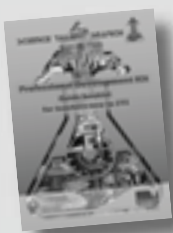
Thinking of introducing Science Talent Search in your school?

Is this your first time entering or coordinating STS?

Don't know where to start?

Order a free copy of our STS professional development kit, consisting of an information booklet and accompanying CD. The kit provides general information about the competition's sections and divisions, your responsibilities, hints on how to implement the competition successfully and some sample projects from previous years.

Contact the STAV office for an order form or download a form from www.sciencevictoria.com.au/sts.html



Discover how STS integrates with VELs

Science Talent Search fits ideally into the VELs philosophy of teaching and learning. STS encourages creative, self-motivated project work through open-ended multi-disciplinary projects. The competition requirements integrate well with many of the VELs strands, domains and dimensions; and they closely align with many of the progression points for science and other domains.

For more information about using Science Talent Search as an integral part of your VELs implementation, contact the Science Talent Search office on 9385 3999 or go to: www.sciencevictoria.com.au and follow the links to Science Talent Search.

How to get started

a. For teachers

A few ideas on how to get classes going

- Run your own science competition to stimulate interest (complete before the end of Term 1).
- Contact STS Co-ordinators at other schools to see how they organise their students.
- Set a project as part of your Science program in primary, junior, and intermediate classes.
- Look at projects from previous years. (eg. from students previous work in STS)
- Put some questions to the class to discuss how to structure a project.
- In class, suggest things like "This task would make a good basis for an STS project."
- When demonstrating a technique, say "You could use that to look atand that would make an interesting STS project."
- When a class is investigating a phenomenon, suggest that anomalies be followed up.
- Declare your availability to assist students.
- Outline criteria and guidelines as specified in the Section Information (photocopy for students).
- Attend sessions on STS which are part of some STAV conferences.

If you need support or have suggestions you can contact the STAV office.

b. Professional development kit

Order a free copy of our STS professional development kit, consisting of an information booklet and accompanying CD. The kit provides general information about the competition's sections and divisions, your responsibilities, hints on how to implement the competition successfully and some sample projects from previous years.

Contact the STAV office for an order form or download a form from the STS website www.sciencevictoria.com.au/sts.html.

For other STS professional development activities check STAV conference programs and the Science Victoria website.



c. For students

- The best thing to investigate or produce is something that strikes you as worthwhile – perhaps something that you have seen or heard which you would like to have a closer look at or tell others about. You may find something interesting in your science classes, around the house or outside. Talk to others about your ideas.
- Below are some suggested sources of ideas. If you borrow an idea, try to introduce some original slant to it. But remember, your own ideas are best.

d. Project references

Many ideas may be found in the following publications:

- STS Handbooks from previous years
- STS Bursary Award books from previous years
- *LabTalk* and *Let's Find Out* - various issues
- *Teaching Science* (ASTA's journal)
- Daily papers
- Magazines eg. Search, Omega, Omni, New Scientist, Double Helix, Scientific American, (check SAGE or GUIDELINES - Ask your school Librarian)
- Science web sites
- Science text books
- Check the 500 Section of your library.

STS Website

www.sciencevictoria.com.au/sts

Make sure you have a look at the "For Teachers" pages as well as all of the other information.

Experimental research



(Lower Primary and Primary Divisions)

Experimental research involves:

1. Choosing and defining a topic. Pick a topic that interests you.
2. Asking questions about your topic. Why? What if...? How? It would be a good idea to do some reading about your selected topic. Libraries and the internet are a very useful resource. You could also discuss ideas with others familiar with your topic.
3. Forming an hypothesis. This is an educated "guess" as to what you think will happen in a certain set of circumstances or conditions. (Look at ONE change at a time).
4. Investigating your hypothesis. To do this properly you will need to design and carry out experiments in a safe manner.

Data logging equipment can be used to collect data.
5. Carefully recording the results of the experiments. A survey, if it is used to collect data as part of an investigation, is regarded by STS as an experiment. (Keeping a log book or taking photographs are useful ways of recording).
6. Analysing results. What do your results mean?
7. Being prepared to change your original ideas and procedures as you get results which may be unexpected.
8. Working logically through your results so as to support or disprove your hypothesis.
9. Writing a report to tell others what you did and what you found, based on experiments you carried out. The experimental report is NOT a research assignment.

Some examples of past topics

- Do emus eat flowers and grass?
- Do seeds grow better with tank or grey water?
- Does smell affect taste?
- Does micro-waved water affect plant growth?
- Does a bicycle travel further with tyres inflated?

Writing an experimental research report

✓ *Tick that you have satisfied each of the guidelines below.*

Entry guidelines

Your report format must include the following:

- ☐ **Introduction** - What gave you the idea? How did you get started?
- ☐ **Aim(s)** - What you are trying to find out? What did you think would happen?
- ☐ **Materials** - List these (everything!).
- ☐ **Method/What-I-did**
List everything you did, but remember to keep them in order (like a recipe).
Describe the safety requirements you followed in conducting this experiment.
- ☐ **Results** - Everything you discovered (or found out).
Keep a little book (logbook) and record everything as you go. To show all this use graphs, tables, pie charts, photos etc...
- ☐ **Discussion** - Discuss your results. How could you improve your experiments?
- ☐ **Conclusion** - List the main things you have discovered or found out. Go back to your results - what do they tell you?
- ☐ **Acknowledgements and References** -
Make sure you include a list of people who gave you help/advice and list any books or websites you used.
- ☐ When your report is finished ask your teacher or parent(s) to check your report to make sure it follows the guidelines.
- ☐ Keep a copy of your work.
- ☐ Present your report stapled into a paper manila folder (not plastic), with completed yellow Face Sheet firmly attached to the outside front cover. This will also assist with postage and transport of entries.

Entries must be posted or delivered to:

STAV House, (PO Box 109)
5 Munro Street Coburg VIC 3058
and arrive by 30 July 2010

All guidelines should be followed to avoid being disadvantaged during judging.

Students who submit a project into the experimental research section are automatically entered into the **National BHP Billiton Science Awards**. Students who win major bursaries in this section of STS will become finalists in this national competition. You must notify STS if you do NOT want your project forwarded to BHP Billiton Awards. For more information go to <http://www.scienceawards.org.au>

Experimental Research

(Junior, Intermediate & Open Divisions)

Experimental research involves:

1. Choosing and defining a topic. Pick a topic that interests you.
2. Asking questions about your topic. Why? What if...? How? It would be a good idea to do some reading about your selected topic. Libraries and the internet are useful resources. You could also discuss ideas with others familiar with your topic.
3. Forming an hypothesis. This is an educated "guess" as to what you think will happen in a certain set of circumstances or conditions. (Look at ONE change at a time).
4. Investigating your hypothesis. To do this properly you need to design and carry out experiments in a safe manner. Data logging equipment can be used to collect data.
 - The method should be logical and test the hypothesis.
 - Allow sufficient time to get meaningful results.
 - Repeating the experiment a number of times can reduce random errors.
 - Experimental Controls make results meaningful.
5. Carefully recording the results of the experiments. A survey, if it is used to collect data as part of an investigation, is regarded by STS as an experiment. (Keeping a log book or taking photographs are useful ways of recording).
6. Analysing results. What do your results mean?
7. Being prepared to change your original ideas and procedures as you get unexpected results.
8. Working logically through your results to support or disprove your hypothesis.
9. Writing a report to tell others what you did and what you found, based on experiments you carried out. The experimental report is NOT a research assignment.

Writing an experimental research report

✓ *Tick that you have satisfied each of the guidelines below.*

Entry guidelines

Your report format must include the following headings:

- ☐ **Abstract** - Give a brief description of what you did and what you achieved.
- ☐ **Introduction** - This must be relevant to the topic and explain why you chose this topic. It must define key terms and provide some background information as well as answering the question "what were you looking at?" Some information from your background reading would be useful.

- ☐ **Aim** - this must give a clear indication of your investigation. Include your hypothesis.
- ☐ **Materials** - List or describe the equipment you used to carry out your experiment.
- ☐ **Method** - Presentation of the method should allow someone else to follow your experiment step by step. Method should report what was actually done, not what you should do. Include any mistakes. Remember to include a description of the safety precautions you used to conduct the experiment. For example, "because the chemicals were corrosive, we wore safety goggles".
- ☐ **Observations and Results** - Present your results in an easily understood format which may include tables, graphs, photos, maps and descriptions. All information should be clearly labelled. Where possible, results should involve measurement. Avoid subjective results such as those involving likes and dislikes.
- ☐ **Discussion** - Analyse what your results show. Discuss the implications and validity of your results. Did your results support or disprove your hypothesis? What problems did you encounter? How could you improve on your experimental design or data collection? What errors could you have made? Reflect on unexpected results.
- ☐ **Conclusion** - The conclusion must relate to the aim. Has the hypothesis been supported or disproved?
- ☐ **Acknowledgements and references**
A reference list must be included. All research is based on some background information. You should list the books, journals and websites you referred to and the people who gave you help or advice. Specific information from another source, when used, must be cited. See page 23 for methods of citing others' work.
- ☐ When finished ask your teacher or parent(s) to check your report to make sure it follows the guidelines.
- ☐ Keep a copy of your work.
- ☐ Present your report stapled into a paper manila folder (not plastic), with completed yellow Face Sheet firmly affixed to the outside front cover. (This assists with postage and transport of entries.)
- ☐ Posters, videos and other accessories are not judged.

Entries must be posted or delivered to:

STAV House, (PO Box 109)
5 Munro Street Coburg VIC 3058
and arrive by 30 July 2010

All guidelines should be followed to avoid being disadvantaged during judging.

Students who submit a project into the experimental research section are automatically entered into the **National BHP Billiton Science Awards**. Students who win major bursaries in this section of STS will become finalists in this national competition. You must notify STS if you do NOT want your project forwarded to BHP Billiton Awards. For more information go to <http://www.scienceawards.org.au>



(Lower Primary and Primary divisions)

1. This section is for Lower Primary (Prep - 3) and Primary (4 - 6) students only. There is a maximum of 4 entries per school for each of these divisions.
2. The project **must** be based around the investigation of a hypothesis (question) through experimental research.
3. All students within the class must be involved in the project. It is advantageous for a project to investigate students' own hypothesis and/or experimental design.
4. The topic or theme is unrestricted **however**, students will be judged on the originality and creativity of the project topic as well as the quality of the science within the project.
5. A representative group of 4 to 6 students will need to present the class project on Judging Day.
6. **Country entrants** are strongly encouraged to attend Judging Day. Country entrants who cannot attend Judging Day are required to record a 5 minute video presentation answering the questions listed in the oral presentation section of the guidelines and a written report of no more than 250 words which explains the model. These should be sent along with their entry.
Please notify STAV via email that you will not be attending the Judging day.
7. The class needs to be clearly identified eg. Victoria Primary School -Year 1, Class XXX
8. A complete bibliography must be included along with acknowledgment of any assistance from teachers and other adults. See page 23 of handbook for directions on referencing and layout.

Entry guidelines

The class project consists of four parts. **You must do all four parts:**

- The written scientific experimental research report
- A photographic poster
- A model and accompanying report
- An oral presentation on Judging Day (or a video for country entrants).

Each part should be presented according to the following guidelines:

Scientific Research Report

The research report must be written or typed following the existing guidelines for 'Writing an experimental research report' Lower Primary and Primary Division found on page 10 of this STS handbook.

- ☐ The report must be stapled or bound together with a cover or in a manila folder. **No loose paper or paper inside plastic sleeves will be judged. The Yellow Face Sheet must be firmly attached to the front cover.**
- ☐ Evidence of involvement of all children in the process must be submitted. This could include some rough copies, notes or drawings and diagrams made by students. This should also be included as part of the experimental research report.

- ☐ Bibliography and acknowledgment list for the whole project should be attached to the back of the Scientific Research Report.

Photographic Poster

- ☐ A minimum of 9 and a maximum of 12 photographs must be submitted as part of the poster presentation.
- ☐ Photographs must be securely mounted on minimum A1 sized poster paper. The poster must be easily transportable and easily carried by one student.
- ☐ All photographs must have captions.
- ☐ Photographs must show the progress of the research project and student involvement.
- ☐ Photographs must be taken by the students using either traditional or digital photography (students are not expected to process their own photos).
- ☐ The photographs can be in colour or black and white.

Model

- ☐ The model (working or informational) must relate to the experimental research work on which the project is based.
- ☐ The model must be easily transportable and able to be carried by one student.
- ☐ The model should be the work of the children. Any assistance that the children receive in building and designing the model must be clearly acknowledged.

Oral Presentation

- ☐ This will occur on Judging Day and a small group of 4-6 children representing the class need to attend and present their entire project at a designated time. The STS section co-ordinator will advise the time.
- ☐ Children will be asked questions about their project to demonstrate their understanding. The questions may include but are not limited to:
 1. What science have you learnt from doing this research project?
 2. When doing experimental research what important skills must you use?
 3. What information are you showing in your photographic poster?
 4. How does your model relate to your research project?
 5. How was the workload distributed amongst the members of your class?

Metropolitan schools must take their projects to Judging Day at Santa Maria College, Northcote with their group representatives on Saturday 14 August 2010. **Schools with Class Project entries will be contacted prior to judging day and be allocated a judging time.** Schools will be notified of their results in the first week of term four.

[Class projects are not eligible for entry into BHP Billiton Science Awards.]

All guidelines should be followed to avoid being disadvantaged during judging.

Picture Story Books (Creative Writing)

(Lower Primary and Primary Divisions)

Topics for 2010

Your picture story book must relate to *Australian Biodiversity*.

Create a science picture story book based on this theme using one of the following topics.

Note: These are the ONLY topics that will be judged.

1. Give me a home amongst the gum trees
2. My island home
3. Up through the ground they came
3. In the darkness I sensed...

✓ Tick that you have satisfied each of the guidelines and criteria below.

Entry guidelines

- ☐ Your picture story book must follow one of the above topics. Please indicate the topic on your Face Sheet.
- ☐ The creative writing and pictures must be done as an imaginative story (detective, horror, drama, biography, etc.)
- ☐ You must incorporate scientific information into your pictures and words. Your story should convey science concepts through pictures supported by minimal text.
- ☐ A list of at least 5 key science ideas you used in developing the picture story book (with a brief explanation) must be included as an appendix. Picture Story Books without scientific content worked into the story and pictures do not rate highly.
- ☐ You must include a Bibliography at the end of your book listing all the books, magazines, websites etc. that you used or referred to in your book.
- ☐ Pages must be collated and secured firmly into an A4 paper manila folder (not plastic) with the completed Face Sheet firmly attached to the outside front cover. Size of pages is A4 only. Folders must be FLAT. Do not use spiral binders.
- ☐ Typed or printed scripts are easier to read, but this is not essential if your handwriting is clear. The Judges will take notice of presentation, so it is important that your book is neat and looks attractive. Picture story books will be penalised for poor presentation.

- ☐ Pictures must be hand drawn or produced on a computer. Clip Art or downloaded illustrations won't rate highly and may infringe copyright requirements. Any art medium is allowed but the book must fit into an A4 manila folder.
- ☐ Picture story books for Lower Primary can be up to 200 words in length, and between 100 and 300 words in length for Primary entrants. A **word count** must be included at the end of the book.

Judging criteria

Your picture story book will be judged according to the following criteria:

Scientific content including:

- ☐ identification of basic scientific ideas
- ☐ accuracy of scientific ideas
- ☐ appropriate amount of scientific content
- ☐ integration of science ideas into your pictures and story
- ☐ 5 key science ideas in appendix

Expression and Presentation including:

- ☐ grammar and spelling
- ☐ clarity of expression
- ☐ use of own words
- ☐ development of story line
- ☐ originality and creativity

Format including:

- ☐ interest of introduction
- ☐ variety of resources used
- ☐ creativity of format
- ☐ interest and entertainment of pictures and story
- ☐ quality of conclusion
- ☐ length within the maximum word count.

Entries must be posted or delivered to:

STAV House, (PO Box 109)
5 Munro Street Coburg VIC 3058
and arrive by 30 July 2010

All guidelines should be followed to avoid being disadvantaged during judging.



(Junior and Intermediate Divisions - Secondary)

Topics for 2010

Your creative writing piece must relate to the theme *Australian Biodiversity*.

Note: These are the **ONLY** topics that will be judged.

1. Once upon a time there was plenty and now...
2. Reclaiming the city
3. Keeping our biodiversity
4. Ferals versus natives

✓ Tick that you have satisfied each of the guidelines and criteria below.

Entry guidelines

- ☐ Your creative writing must follow one of the above topics. Please indicate the topic on your entry form and **Face Sheet**.
- ☐ The creative writing must be done as an imaginative story (any genre: eg. detective, horror, drama, biography), in the format of an essay or any other style such as **comics, cartoons, diary, letter** and so on.
- ☐ You must incorporate scientific information in your story.
- ☐ A list of at least 5 key science ideas that you used in developing the story (with a brief 2-3 sentences explanation) must be included as an appendix. The Judges will be looking for scientific content worked into the story.
- ☐ You must include a Bibliography at the end of your entry in which you list all your references (eg. books, journals, websites) which you have used or referred to. Specific information from another source, when used, must be cited. See page 23 for methods of citing others' work. Note the guidelines for websites.
- ☐ Pages must be collated and stapled into an A4 paper manila folder (not plastic) with the completed Face Sheet firmly affixed to the outside front cover. Size of pages is A4 only. Folders must be FLAT. Do not use spiral binders.
- ☐ Typed or printed scripts are easier to read, but this is not essential if your handwriting is clear. The Judges will take notice of presentation, so it is important that your entry is neat and looks attractive. Poor presentation will be penalised. Grammar and spelling should be correct.
- ☐ Illustrations may be hand drawn or produced on a computer. Clip Art or downloaded illustrations are not acceptable and may infringe copyright laws.



- ☐ Your writing should be 500 to 1000 words in length. Entries over the word limit will be penalised. A **word count** must be included at the end.

Judging criteria

Your entry will be judged according to the following criteria:

Scientific content including:

- ☐ identification of basic scientific ideas
- ☐ appropriate amount of scientific content
- ☐ accuracy of scientific ideas
- ☐ integration of science ideas into your creative writing
- ☐ 5 key science ideas in appendix.

Expression and Presentation including:

- ☐ grammar and spelling
- ☐ clarity of expression
- ☐ use of own words
- ☐ development of story line
- ☐ originality and creativity.

Format including:

- ☐ interest of introduction
- ☐ variety of resources used
- ☐ creativity of format
- ☐ interest and entertainment in reading the story
- ☐ quality of conclusion
- ☐ length within the maximum word count
- ☐ bibliography (refer to page 23).

Entries must be posted or delivered to:

STAV House, (PO Box 109)
5 Munro Street Coburg VIC 3058
and arrive by 30 July 2010

All guidelines should be followed to avoid being disadvantaged during judging.

Working Models

(All Divisions)

Although you are encouraged to follow this year's theme, you may choose to explore a scientific topic of your choice.

(Note that Information and Scale Models is a separate section to Inventions. See page 16 for information about the Inventions section.)

Scale models

As the title suggests, this is a scaled representation of an existing invention. You are asked to make a **WORKING** model that simulates the operation of, and the scientific principles behind, an existing technology. You should choose a model which clearly illustrates a scientific principle. For example, you could construct a scale model of a hydroelectric power station that demonstrates how potential energy can be used to generate electricity.

Information models

Information models are **WORKING** models that either demonstrate a scientific principle or concept, or simulate a scientific technique. These models are intended to educate people about the concept being illustrated. For example, if you wanted to show how electrons flow through a wire you couldn't use electrons (because they are so small) but would use something large enough to see to represent the electrons.

- ✓ Tick that you have satisfied each of the guidelines and criteria below.

Entry guidelines

- ☐ Your model must be a **WORKING** model.
- ☐ Your model must be no larger than 0.5m x 0.5m x 0.5m, and weigh no more than 15 kg unless special permission is granted by the Science Talent Search Section Co-ordinator.
- ☐ Attach a photo of your model to your report to give to the judges on Judging Day
- ☐ You must include with your model a written explanation which:
 - ☐ identifies your model either as a scale model or an information model. Also label your model as 'scale' or 'information'.
 - ☐ describes how you went about building it, problems you encountered and how they were solved.

- ☐ includes instructions on how to operate your model, where appropriate.
- ☐ **shows a clear understanding of the science being demonstrated.**

This should be no more than four A4 pages in length, presented in a paper manila folder (not plastic) with a copy of the completed Face Sheet firmly attached to the front. Clearly indicate on the front of the folder whether it is a scale model or an information model.

- ☐ Your model must be original (volcanoes will score poorly!!). Models made from kits without original input do not score well.
- ☐ Scale models must be selected carefully to illustrate the scientific concept chosen. The best scale models will clearly and accurately illustrate only one or two scientific concepts. These should be the major concepts in the operation of the model.
- ☐ Your model must be safe to operate in a crowded area. All models must have appropriate safety features; eg. boilers must have correctly operating safety valves. Dangerous chemicals must not be used, and rocket models will not be judged.

Judging criteria

On Judging Day you will present and discuss your model with the Judges.

Your model will score best if:

- ☐ it is well constructed
- ☐ it is easy to use
- ☐ the scientific principle used is clearly understood and demonstrated
- ☐ it is appropriate to the concept being illustrated
- ☐ you have shown resourcefulness in the parts you have chosen to use
- ☐ you can explain your model clearly and accurately in terms of the **science** behind it, how it works and the design process
- ☐ you can show that you have put effort into making the model.
- ☐ Information models should show original and creative presentation.

JUDGING DAY FOR MODELS

Saturday 14 August 2010

Methodist Ladies' College,
Fitzwilliam Street Entrance, Kew

Country entrants are **strongly encouraged** to bring their model along to Judging Day to discuss their entry with Judges (rather than posting the model).

All guidelines should be followed to avoid being disadvantaged during judging.



(All Divisions)

Although you are encouraged to follow this year's theme, you may choose to explore a scientific topic of your choice.

(Note that Inventions is a separate section to Information and Scale Models. See page 15 for information about the Working Models section.)

What is an invention?

Inventions are original applications of technology which solve a problem. The scope for inventions is limited only by your imagination. You are asked to apply your knowledge of science to make a **WORKING** invention that has a practical application. Your invention may be a new device, method or process that has not existed before or you may choose to look at an existing device and invent a solution that works better. In the past, students have entered such devices as rain alarms, dog feeders, mechanical lawn edges and a pool fence safety door, among many others.

✓ Tick that you have satisfied each of the guidelines and criteria below.

Entry guidelines

- ☐ Your invention must be presented as a **WORKING** invention.
- ☐ Your invention must be no larger than 0.5m x 0.5m x 0.5m, and weigh no more than 15 kg unless special permission is granted by the Science Talent Search Section Coordinator.
- ☐ You must include with your invention a written report which:
 - ☐ explains how your invention solves a problem
 - ☐ explains what is original or new about your invention
 - ☐ describes how you went about building and testing it, problems you encountered and how they were solved.
 - ☐ **shows a clear understanding of the science involved.**
 - ☐ includes instructions on how to operate your invention where appropriate.

(Your report should be no more than four A4 pages in length, presented in a paper manila folder (not plastic) with a copy of the completed Face Sheet firmly attached to the front.)

- ☐ Your invention must be original. (Scale models of existing devices should be entered in the Working Models section.)

- ☐ Your invention must be safe to operate in a crowded area and must have appropriate safety features (eg. boilers must have correctly operating safety valves). Dangerous chemicals must not be used and rocket-type inventions will not be judged.
- ☐ Attach a photo of your invention to your report to give to the judges on Judging day.



Judging criteria

On Judging Day you will present and discuss your invention with the Judges.

Your invention will score best if:

- ☐ it is highly original and/or inventive
- ☐ it solves a real problem
- ☐ it is well constructed
- ☐ it is easy to use
- ☐ the scientific principle used is clearly understood and demonstrated
- ☐ you have shown resourcefulness in the parts you have chosen to use
- ☐ you can explain your invention clearly and accurately in terms of the **science** behind it, how it works and the design process
- ☐ you can show that you have put effort into designing and making your invention.

JUDGING DAY FOR INVENTIONS

Saturday 14 August 2010

Methodist Ladies' College,
Fitzwilliam Street Entrance, Kew

Country entrants are strongly encouraged to bring their invention along to Judging Day to discuss their entry with Judges (rather than posting the invention).

All guidelines should be followed to avoid being disadvantaged during judging.

Posters - Scientific Wallcharts

(Lower Primary and Primary Divisions)

Topics for 2010

The theme for Posters is *Australian Biodiversity*.

Note: These are the ONLY topics that will be judged.

1. Why are our native species disappearing?
2. Australian forests under the waves
3. Invertebrates: eating and being eaten
4. Adapting to bushfires, floods and extreme temperatures

✓ Tick that you have satisfied each of the guidelines below.

Entry guidelines

You are required to:

- ☐ Give a clear explanation of the scientific and technical principles involved (refer to the diagrams you have used that help illustrate these principles)
- ☐ Explain the significance and impact that the topic has in the real world (refer to the diagrams you have used that help illustrate these principles)
- ☐ Include at least 3 relevant diagrams which summarise the two guidelines above
- ☐ List references used. Put these in a **small box** at the **bottom right hand corner** of the poster.
- ☐ Maximum poster size is 80cm x 60cm. The minimum size that will be accepted is 60cm x 40cm.
- ☐ Use flexible poster paper that can be easily rolled up.
- ☐ All diagrams and text must be original.
- ☐ Text must be in your own words. It may be hand written or produced via computer. The text needs to be concise (use just enough words to explain the topic ideas when a person looks at the poster/chart for a couple of minutes.)

- ☐ Written information must be legible (visible from 1 metre) and contain a major heading for the topic and sub-headings (visible from 2 metres) for ideas/concepts within the topic.
- ☐ Maximum word limit is 400 words, including headings, explanations and captions; excluding bibliography
- ☐ Diagrams may be either hand drawn or produced using tools on a computer. Diagrams copied from other software or downloaded are not acceptable.
- ☐ Scanned pictures, photographs of pictures and photographs are not acceptable on any part of your poster.
- ☐ Diagrams must have clear headings/labels and be distinguishable from a distance of 2 metres.
- ☐ Posters must not have any built-up or three-dimensional sections.
- ☐ If you have stuck or attached any diagrams or writing to the poster, you must laminate or 'contact' it, so that there are no loose edges protruding from it.
- ☐ You will be expected to give an oral presentation on your poster for approximately 5 minutes and will also be expected to answer questions from the judges.
- ☐ Judges will look for evidence of accurate and relevant scientific content, understanding of the material presented, and depth of investigations, innovative and creative thought in the visual presentation and in the selection of ideas investigated.

JUDGING DAY FOR POSTERS

Saturday 14 August 2010

Methodist Ladies' College
Fitzwilliam Street entrance, Kew

Country entrants may send their poster to STAV House, Coburg on 29 and 30 July, 2010. It must be rolled and in a tube with a copy of the completed Face Sheet firmly affixed to the **outside** of the tube. A clear written explanation of scientific & technological principles involved should also be included (No more than two A4 pages). Country Entrants are **strongly encouraged** to attend Judging Day with their poster to discuss the entry with Judges.

All guidelines should be followed to avoid being disadvantaged during judging.



Posters - Scientific Wallcharts



(Junior and Intermediate Divisions - Secondary)

Topics for 2010

The theme for Posters is *Australian Biodiversity*.

Note: These are the **ONLY** topics that will be judged

1. Links between species - more than just food
2. Biodiversity in my backyard
3. Impacts of invaders on Australian biodiversity
4. Bacteria and Australian biodiversity

✓ Tick that you have satisfied each of the guidelines below.

Entry guidelines

You are required to:

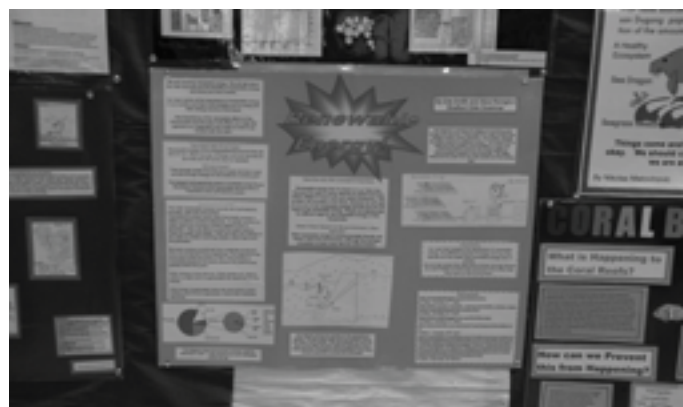
- ☐ Give a clear explanation of the scientific and technical principles involved (refer to the diagrams you have used that help illustrate these principles)
- ☐ Explain the significance and impact that the topic has in the real world (refer to the diagrams you have used that help illustrate these principles)
- ☐ Include at least 3 relevant diagrams which summarise the two guidelines above.
- ☐ List references used. Put these in a **small box** at the bottom **right hand corner** of the poster.
- ☐ Maximum poster size is 80cm x 60cm. The minimum size that will be accepted is 60cm x 40cm.
- ☐ Use flexible poster paper that can be easily rolled up.
- ☐ All diagrams and text must be original.
- ☐ Text must be in your own words. It may be hand written or produced via computer. The text needs to be concise (use just enough words to explain the topic ideas when a person looks at the poster/chart for a couple of minutes.)

- ☐ Written information must be legible (visible from 1 metre) and contain a major heading for the topic and sub-headings (visible from 2 metres) for ideas/concepts within the topic.
- ☐ Maximum word limit is 400 words, including headings, explanations and captions; excluding bibliography
- ☐ Diagrams may be either hand drawn or produced using tools on a computer. Diagrams copied from other software or downloaded are not acceptable.
- ☐ Scanned pictures, photographs of pictures and photographs are not acceptable on any part of your poster.
- ☐ Diagrams must have clear headings/labels and be distinguishable from a distance of 2 metres.
- ☐ Posters must not have any built-up or three-dimensional sections.
- ☐ If you have stuck or attached any diagrams or writing to the poster, you must laminate or 'contact' it, so that there are no loose edges protruding from it.
- ☐ You will be expected to give an oral presentation on your poster for approximately 5 minutes and answer questions from the judges.
- ☐ Judges will look for evidence of accurate and relevant scientific content, understanding of the material presented, and depth of investigations, innovative and creative thought in the visual presentation and in the selection of ideas investigated.

JUDGING DAY FOR POSTERS

Saturday 14 August 2010

Methodist Ladies' College
Fitzwilliam Street entrance, Kew



Country entrants may send their poster to STAV House, Coburg on 29 and 30 July, 2010. It must be rolled and in a tube with a copy of the completed Face Sheet affixed to the outside of the tube. A clear written explanation of scientific & technological principles involved should also be included (No more than two A4 pages). Country Entrants are **strongly encouraged** to attend Judging Day with their poster to discuss the entry with Judges.

All guidelines should be followed to avoid being disadvantaged during judging.

Games

(All Divisions)

Topics

You may choose any topic that is based on a real issue. This year's theme is *Australian Biodiversity*, so you could base your game around that.

Your entry does not have to be a board game. There are many other ways in which games can be played. Why not design a card game which teaches a scientific idea, or think of ways in which players use stories or drawings or perhaps act out scientific events. Just make sure your game meets the entry guidelines listed below. The judging criteria will be sufficiently broad to cater for different kinds of games. The judges will be looking for games which are original and creative and not too closely modelled on existing games. Computer games must still be entered in the Computer Programs section.

✓ Tick that you have satisfied each of the guidelines below.

Entry guidelines

Produce a game which:

- ☐ presents a scientific idea, or teaches about a scientific principle.
- ☐ shows evidence that research was used to develop the game around finding solutions to real issues (eg. rather than a game based on 'water', base it on water pollution).
- ☐ is interesting and clear.
- ☐ is educational and involves the players in completing tasks, answering questions and making decisions.
- ☐ if it is a board game, avoids having players land on "luck" squares and being sent off without teaching them anything or finding out if they know anything.
- ☐ has a high level of Scientific processing in tasks set for the players.
- ☐ has tasks that promote problem solving and concept development rather than questions that require recall of facts. If you ask questions, don't make them trivial or obscure.
- ☐ The game must be original and fun to play.

- ☐ The game must be self contained in a box and labelled on the outside. The maximum box size is 25cm x 45cm with a depth of 14cm. If used, the maximum board size is 42cm x 60cm (4 X A4 size).
- ☐ Ensure the game is well presented and packaged. Make sure that all of the bits will stay together in the one package. Parts must not easily separate during transport.
- ☐ Include with your game a clear set of step-by-step instructions or rules.
- ☐ Specify the age group the game is aimed at and make it appropriate for the target audience.
- ☐ Include a written statement on what aspect of science the game is intended to teach. This should be about one A4 page in length.
- ☐ You will be expected to give an oral presentation on your game for approximately 5 minutes on the science the game is intended to teach and answer Judges' questions.

JUDGING DAY FOR GAMES
Saturday 14 August 2010
Wesley College,
577 St Kilda Road, Prahran

Country entrants are **strongly encouraged** to attend Judging Day with their game to discuss their entry with Judges. Unaccompanied country entries must include a written description about the scientific content/principle of the game and include a reference list (no more than two A4 pages). Entries must be sent to STAV by 30 July 2010.



All guidelines should be followed to avoid being disadvantaged during judging.
**** No responsibility will be taken by STS for lost or damaged games or parts of games.**



(All Divisions)

Although you are encouraged to follow this year's theme, you may choose to explore a scientific topic of your choice.

In this section you will create a Game, Simulation or Presentation (or a combination of these) on a computer. Your creation must illustrate a **scientific concept** and **must** be interactive.

✓ *Tick that you have satisfied each of the guidelines below.*

Entry guidelines

- ☐ Your program must demonstrate scientific content and understanding of this content.
- ☐ If your project is a game, is it fun to play? Is there some variety in the game? Are the instructions clear? Is your work well organised?
- ☐ Is there some level of interaction for the user?
- ☐ Does your computer program incorporate good use of graphics and text?
- ☐ The program may be in any language - including Logo, HyperCard, HTML and Visual Basic; and programs such as Kid Pix, Hyperstudio, Micro Worlds and PowerPoint.
- ☐ If your project is a simulation, is the computer program the best way to demonstrate it? Can it be done better without using a computer?
- ☐ Is the program USER FRIENDLY and almost impossible to crash?
- ☐ Include with your Computer Program, a written explanation giving:
 - the aim of the program
 - what the program does
 - the intended audience for the program
 - clear instructions on the running of the program
 - a flow-chart setting out the logic and flow of the program
 - a list of references used, in the correct format (refer to page 23)
- ☐ The written explanation should be no more than two A4 pages, presented in a paper manila folder (not plastic) with a copy of the completed face sheet firmly attached.

- ☐ Your simulation/game should run for less than 5 minutes.
- ☐ **Provide a copy of the program on disk clearly naming the computer used and the memory required.** Any accessories required must be supplied for judging purposes.
- ☐ **Provide a second clearly labelled back-up disk** with your Name, ID Code and School Name (which will remain with your Judges).
- ☐ Be prepared to discuss your entry with a Judge on the Special Judging Day.

All Students attending Judging day **MUST bring their own Computer, Monitor, Leads and Power Boards** and any other necessary equipment.

No responsibility will be taken by STS for lost or damaged equipment.

Please ensure your entry is kept secure.

JUDGING DAY FOR COMPUTER PROGRAMS

Saturday 14 August 2010

Methodist Ladies' College,
Fitzwilliam Street entrance, Kew

Country entrants are **strongly encouraged** to attend Judging Day with their computer program and computer hardware to discuss their entry with Judges. If this is not possible entrants must include a written statement with their entry (not more than two A4 pages) summarising the scientific principles demonstrated by their program. Entries must be sent to STAV by 30 July.



All guidelines should be followed to avoid being disadvantaged during judging.

Science Photography

(All Divisions)

In this section you are asked to submit photographs which record some scientific event or illustrate some scientific phenomenon. You may submit between three and six photographs, which must be linked by a common theme. Be careful to prepare prints that are suitable for display. Your topic may be based on any scientific theme or you may use the theme for this year, *Australian Biodiversity*.

Prints that suggest cruel or dangerous procedures have been used will not be judged.

✓ *Tick that you have satisfied each of the guidelines below.*

Entry guidelines

Students must submit their prints, **and** original images or negatives and a written report according to the following guidelines. The entire entry must be presented in a manila folder or pocket (not plastic) with a copy of the Yellow Face Sheet attached to the front.

Prints

- ☐ Submit only 3 – 6 photos.
- ☐ Each print must be separately mounted on thick card no bigger than A4 size. Professional mounting is not required. Prints are for display. Book, poster and collage format are not allowed.
- ☐ Each separately mounted print must include:
 - a caption that explains the photograph
 - the student's name on the front
 - labels on the back of all parts of the entry, with photographer's name, address, school and STS code.
- ☐ Photographs must be taken by the entrant using a traditional or digital camera (with traditional photography students are not required to develop their own photos). Any enhancements to photographs either digital or traditional must be done by the student.
- ☐ Images **cannot** be taken from other print or electronic sources.
- ☐ The official yellow face sheet must be signed by a teacher **and** parent. Without this signature verifying originality the entry will not be judged. (The face sheet is sent to schools after entries are received).

Original images

- ☐ **Digital Photography:** all original, unaltered images must also be provided on a separate A4 sheet of paper as part of the explanation of the process undertaken, regardless of whether you altered the final images.

- ☐ **Traditional Photography:** the negatives must be supplied (attached to an A4 sheet of paper).

Written report

- ☐ The entry must include a written report following the guidelines below and not more than 800 words. Submissions without reports will not be judged.

This report should be set out as follows:

- **Aim** - State clearly what you intended to do in terms of your topic and the photography.
- **Method**
State clearly how you set up and took your photographs (images). Include information about the type of camera, other hardware and software you used and how you altered the images (if relevant).
- **Scientific Content** - Describe the scientific principles or ideas you are displaying in your photographs and the relevance of the particular photographs you have selected.

- ☐ The report and mounted photographs must be presented in a **paper manila folder or pocket** (not plastic) with a copy of the completed Face Sheet firmly attached to the front. (A pocket avoids loss of parts of the project).

On Judging Day

- ☐ Students need to be prepared to discuss their entry with a Judge. An understanding of the scientific content of the photographs and explanation of techniques used to produce the photographs will be the focus of the discussion.

When assessing entries judges look at the following criteria:

- a. all handbook guidelines for photography have been followed
- b. explanation of the scientific topic/theme
- c. **scientific relevance** of photographs
- d. technical skill in producing the photographs
- e. dramatic impact and presentation.

JUDGING DAY FOR PHOTOGRAPHY

Saturday 14 August 2010

Santa Maria College

50 Separation Street, Northcote

Country entrants may send their photos for delivery to STAV House, Coburg on 29 and 30 July. However, country entrants are **strongly encouraged** to attend Judging Day with their photographs to discuss their entry with Judges.

All guidelines should be followed to avoid being disadvantaged during judging.

Video Productions (DVD)



(All Divisions)

Your video, which must be presented as a DVD, should focus on areas of science where motion, colour and sound are important. Although you are encouraged to follow this year's theme 'Australian Biodiversity' you may explore a scientific topic of your own choice.

✓ *Tick that you have satisfied each of the guidelines below.*

Entry guidelines

Assessment of video productions will include:

- ☐ the science content
- ☐ originality, creativity, and clarity of thought
- ☐ impact on the viewer
- ☐ video skills
- ☐ Ensure your video does not simply display a technique used in science (eg. how to safely light a Bunsen burner); emphasise the **science** involved (eg. why is the flame blue or yellow?)
- ☐ Since technical quality is important, you should use high-grade DVDs for your original recording and for editing.
- ☐ With videos there will be times when 'extras' are called for either to act or hold the camera, so the entrants can appear in the recording. This does not contravene the entry requirements of Science Talent Search as long as the two students recorded on the entry form are the driving force behind the production and any help has not brought with it a level of presentation beyond the skills of the entrants in the group.
- ☐ Some useful techniques might be:
 - Editing segments of your DVD.
 - Adding music.
 - Time lapse sequences.
 - Superimposed graphics or lettering.
 - Zooming.
 - Fading in and out.
- ☐ Your entry must be an original work, generated by you and definitely not recorded from some other person's video recording and not entered in a previous year.
- ☐ The entry must be self-contained. Your program must not rely on any other additional material such as posters, audiocassettes, notes or specimens. It will be judged on its own merits.
- ☐ The entry **MUST** be submitted on **DVD** format only. Use any movie-making software to create your DVD. The DVD **MUST** BE ABLE TO BE READ BY A DVD

PLAYER. Please **test this before you submit** your final DVD! You must state the program you used to produce your DVD.

- ☐ You must bring your own laptop with DVD player to Judging Day. **And**, you **MUST convert** your original computer video program to be **DVD compatible**. This is so that videos can be readily copied for the Exhibition day onto one disc. Some video computer programs are not readily available to the judges to be able to convert the videos to DVD.
- ☐ The program must end with a list of credits, including a list of video equipment used, titles or any scientific references consulted and an acknowledgment of any help received.
- ☐ The program running time must not exceed 5 minutes. (This includes the credits.)
- ☐ Include your name, school, division and title on the outside of your cassette and on its box, as well as on your completed Face Sheet.
- ☐ You need to be prepared to discuss your entry with a Judge on the Special Judging Day. An understanding of the scientific content of the video and explanation of techniques used to produce the video will be the focus of the discussion.
- ☐ If you are a **country entry** not attending judging day, you must include an additional 3 – 5 minute segment at the end of your video featuring your teacher asking the following questions and the student(s) answering:
 - What inspired you to do this topic?
 - Tell us about your video (what do you expect us to see?)
 - What scientific principles are demonstrated by your video?
 - What resources did you use?
 - Did anyone help you put together the show? Who did the camera work?
 - How long did it take to do?
 - What did you learn?
 - Did you have to edit? How did you do this?

JUDGING DAY FOR VIDEOS

Saturday 14 August 2010

Santa Maria College,
Separation Street, Northcote

Country entrants may send their Videos for delivery to STAV House, Coburg on 29 and 30 July. Please ensure they are adequately packaged to avoid damage. However, country entrants are **strongly encouraged** to attend Judging Day with their video to discuss their entry with Judges.

All guidelines should be followed to avoid being disadvantaged during judging.

How to cite references and write a bibliography

What needs to be cited?

Some information that you use in an Experimental Research Report or Creative Writing may need to be referenced. The type of information that should be referenced includes factual data (dates and numerical figures), graphs, diagrams and others' opinions.

Methods of citing others' work

There are a number of methods used to cite other people's work. Two common ways are described in the examples below.

Example 1: (Using footnotes)

- Factual information in text: The LD50 is the amount per kilogram body mass which will kill half the animals it is given to.¹
- Footnote 1: (at bottom of page)
Coghill Graham (1985) *Sciencescope 2*, Heinemann Educational Australia p 167

Example 2:

(Acknowledging the source in brackets directly after the statement)

- The LD50 is the amount per kilogram body mass which will kill half the animals it is given to (Coghill, 1985, p167).

How to list a bibliography

The system used to cite information must be supported by a bibliography. A bibliography is a list of all the sources of information you used (eg. books, journals, magazine and newspaper articles, TV broadcast, videos, personal interviews, websites, etc.)

For books, you should write:

Author(s), year, title of book, edition, publisher information, page number.

eg. Coghill, Graham (1985) *Sciencescope 2* Heinemann Education Australia, p167

For journals and other articles:

Author(s), title, article, source, edition, information, page

eg. Lemonick, Michael. *Are We Ready for Fat-Free Fat?* *TIME* (January 22, 1996) pp 40-46

For web sites:

- Name of article/source
- Date article placed on the web or last updated (if available)
- URL address
- Date and time accessed.





Exhibition and Presentation Day

All Bursary winners are expected to display their projects on Exhibition and Presentation Day in the Union Hall, La Trobe University, Bundoora on **Wednesday 3 November 2010**.

Winners in the Games, Models, Inventions and Computers sections must bring their entries and other necessary equipment to the Exhibition.

All other winning entries will be delivered to La Trobe University by the STS Committee. **Students who did Experimental Research may wish to present their work as a poster or hands-on display on Exhibition Day.**

The Presentation of bursary cheques and, where appropriate, medallions will take place on Presentation Day at a Presentation ceremony. All bursary winners are expected to be in attendance between 9am and 1.30pm to discuss their projects with visitors and to receive their awards.

The proposed plan for the day is:

8.00 - 9.30am	Registration
9.30am	The Exhibition is opened to invited guests and the Press. It is important that prizewinners are present to discuss their work with interested people.
10.00am	The Exhibition will be officially opened, after which families and members of the public are encouraged to look through the Exhibition. Then comes the long awaited reward for your efforts this year - the presentation of bursaries and medallions. This is a fitting conclusion for your efforts.
11.15am - 12.15pm	Bursary Ceremony 1
12.30pm - 1.30pm	Bursary Ceremony 2

Note: The above plan may change. Bursary winners will be sent a detailed plan for this day when they are notified of their success early in Term 4.

What happens next?

Having seen how you can benefit from STS, we hope that you will start to plan another entry for 2011. Perhaps you will have gained some new ideas from seeing the work of others and from talking to prize winners from other schools.

COLLECTION OF ENTRIES

All metropolitan entries (winning & non-winning) **MUST** be collected on:
Wednesday 3 November 2010
from the Union Building, La Trobe University between 12.00 noon and 1.00pm
 Country entries should be collected at this time if possible.

Remaining metropolitan entries will be disposed of immediately after the exhibition if they are not collected.
Remaining country entries will be returned on arrangement by mail.

STS Presenters in 2009

STAV and the STS Committee would like to thank each of the opening speakers and presenters for their contribution to the 2009 Presentation Day and acknowledge their commitment and involvement to Science Education.

Dr Mark Sandeman, Deputy Dean, Faculty of Science, Technology and Engineering, La Trobe University

Dr Lindy Lumsden, Arthur Rylah Institute

Dr Christine Redman, University of Melbourne

Dr Emma Ryan-Weber, Swinburne University of Technology

Mr David Trotter, CSIRO Education

Dr Chris Fluke, Swinburne University of Technology

Dr Sarah Maddison, Swinburne University of Technology